CLAIMS

1. Method for adjusting a relative angle of rotation (Φ) between a camshaft (12) and a crankshaft (5) using an electromechanical phase adjuster (11), comprising the steps:

- calculating a deviation in the angle of rotation ($\Delta\Phi$) between a desired angle of rotation (Φ_{SOLL}) to be set and a determined actual angle of rotation (Φ_{IST}) in a first control loop,
- calculating a desired adjustment speed (Ω_{SOLL}) dependent on the deviation of the angle of rotation ($\Delta\Phi$) using an angle of rotation adjuster (23),
- calculating a deviation of the adjustment speed ($\Delta\Omega$) between a desired adjustment speed (Ω_{SOLL}) and an actual adjustment speed (Ω_{IST}) calculated from at least one measurement parameter in a second control loop cascaded below the first control loop,
- calculating an output parameter dependent on the deviation of the adjustment speed ($\Delta\Omega$) through an adjustment speed adjuster (26) cascaded below the angle of rotation adjuster (23), and
- adjusting the angle of rotation (Φ) as a function of the parameters calculated in the preceding steps using an electromechanical actuator (14).

2. Method according to Claim 1, wherein the actual adjustment speed (Ω_{IST}) is calculated at least from one rotational speed (Ω_S) of the actuator (14) and a superimposed rotational speed ($\Omega_Ü$) of a drive shaft or a shaft coupled with the drive shaft.

3. Method according to Claim 2, wherein the superimposed rotational speed ($\Omega_Ü$) is calculated at least from a rotational speed (Ω_K) of the crankshaft (5).

4. Method according to Claim 1, wherein the actual adjustment speed (Ω_{IST}) is calculated in a monitoring module (28).

5. Method according to Claim 1, wherein the output parameter of the adjustment speed adjuster (26) is a desired current (I_{SOLL}) of the actuator (14).

6. Method according to Claim 5, further comprising the steps:
- calculating a current deviation (ΔI) between the desired current (I_{SOLL}) and a measured actual current (I_{IST}) of the actuator (14) in a third control loop cascaded below the second control loop, and
- calculating a control parameter dependent on the current deviation (ΔI) using a current adjuster (30) cascaded below the adjustment speed adjuster (26) before the adjustment of the angle of rotation (Φ).

7. Method according to Claim 5, wherein the desired current (I_{SOLL}) is limited to a maximum current value (I_{MAX}).

8. Phase adjuster (11) for adjusting a relative angle of rotation (Φ) between a camshaft (12) and a crankshaft (5), comprising
- a first computing module (22) for calculating a deviation in the angle of rotation ($\Delta\Phi$) between a desired angle of rotation (Φ_{SOLL}) to be set and a determined actual angle of rotation (Φ_{IST}) in a first control loop,
- an angle of rotation adjuster (23) for calculating a desired adjustment speed (Ω_{SOLL}) dependent on the deviation in the angle of rotation ($\Delta\Phi$),
- a second computing module (24) for calculating a deviation in the desired adjustment speed ($\Delta\Omega$) between the desired adjustment speed (Ω_{SOLL}) and an actual adjustment speed (Ω_{IST}) calculated from at least one measurement parameter in a second control loop cascaded below the first control loop,
- an adjustment speed adjuster (26) cascaded below the angle of rotation adjuster (23) for calculating an output parameter dependent on the deviation in the adjustment speed ($\Delta\Omega$) for the adjustment speed, and
- an electromechanical actuator (14) for adjusting the angle of rotation (Φ).

9. Phase adjuster according to Claim 8, further comprising

- a third computing module (29) for calculating a current deviation (ΔI) between a desired current (I_{SOLL}) and a measured actual current (I_{IST}) of the actuator (14) in a third control loop cascaded below the second control loop, and
- a current adjuster (30) cascaded below the adjustment speed adjuster (26) for calculating a control parameter dependent on the current deviation (ΔI) before adjusting the angle of rotation (Φ).

10. Phase adjuster according to Claim 8, wherein the actuator (14) is a DC motor.